APPENDIX I
Preliminary Report of the Canadian GILS Subgroup And GILS Pilot Project

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Government Information Locator Service

(GILS)

Preliminary Report

of the

Canadian GILS Subgroup

and

GILS Pilot Project

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Executive Summary

This preliminary report of the Canadian GILS Subgroup and the GILS Pilot Project summarizes the activities and progress that has been made to implement a Canadian **G**overnment **I**nformation **L**ocator **S**ervice (GILS).

In August 1995, Treasury Board recognized a need to establish a primary Government of Canada Internet site and requested the Government Telecommunications and Informatics Services (GTIS) to develop and maintain gateway services to government information.

Based on a U.S. standard, adapted to meet Canadian government needs, GILS provides users with the means of finding government information located in local and remote systems. It offers a standard way of describing government information holdings. These standardized descriptions may in turn be used by automated systems to improve the precision of the information retrieval process and also to assist government departments in managing their information holdings. GILS is based on standards for information retrieval and interchange. Thus it can be implemented on any systems hardware/software platform that is connected to the Internet or an Intranet.

Section 3 provides a very brief summary of Canadian GILS activities. It describes extensions to the U.S. standard; highlights development of the Canadian GILS Guidelines; identifies valid GILS record formats, and indicates initial promotional and training efforts provided by the subgroup members.

Section 4 describes GILS implementation experience in Canada and abroad. It summarizes development work done by GTIS; gives departmental options for GILS record creation, and; notes the opportunity for distributed GILS database deployment. The U.S. experience with GILS implementation is presented and other GILS initiatives noted to position the Canadian government efforts in a global context.

Section 5 gives the Phase 1 project objectives; identifies the participating departments; summarizes user responses to two pilot questionnaires, and; interprets the initial user feedback on the GILS record and information retrieval facilities.

Section 6 identifies a significant number of issues and requirements that will need to be addressed in a Phase 1 follow-up and through downstream development on a government-wide and departmental basis.

The report concludes with a set of recommendations concerning policy, operational and technical factors related to government-wide GILS deployment. It recommends government-wide commitment to GILS and identifies the need for co-ordination within and across departments, staff training and development and technical leadership.

Appendices A through E provide further details on items mentioned in the report.

Background

In March 1995, the Treasury Board Information Management Sub-Committee (TIMS) approved the government-wide Internet strategy (For details see: http://canada.gc.ca/programs/guide/1_1_4e.html). The strategy recognized the need for a corporate-wide federal presence on the Internet and a focal point for single-window access through the Internet to services and information available from federal institutions.

In August 1995, Treasury Board approved the selection and mandate of Government Telecommunications and Informatics Services (GTIS) to host the primary Government of Canada Internet site (Canada site). For details concerning the mandate see: http://www.pwgsc.gc.ca:80/homepage/text/g1gtis-e.html. Treasury Board also recognized the need for improved location, search and retrieval capabilities. Specifically GTIS was asked to:

- incorporate the technology and information of the Open Government Pilot and the Champlain search and retrieval software developed by Industry Canada with the Government Information Finder Technology (GIFT) developed by GTIS, and;
- develop and maintain Internet gateway services including government information location and retrieval capabilities.

GILS is the standard and service strategy, that was adopted by GTIS, to implement GIFT and to provide the gateway location and retrieval capabilities. This strategy was based on recommendations and implementation advice provide by the GILS Subgroup, an inter-department working group established under the aegis of the Government Standards Program.

GILS is also the standard recommended in the Government of Canada Internet Guide for internal departmental use and for sharing metadata across departments.

1. What is GILS?

The Government Information Locator Service (GILS) is a computer platform independent system for locating government information in a decentralized collection of databases. GILS systems or locators are made up of searchable databases of GILS records which indicate what information is available, where it is located and how it may be accessed or acquired. A GILS record is not the information itself, but a standards-compliant description and a pointer to an information resource. GILS records can describe a collection, a service, a system, a Web site, a publication or an individual electronic document. They can contain a direct link (Uniform Resource Locator or URL) to a networked information resource. They can also describe how to obtain information that is not available on an electronic network such as the Internet or a departmental Intranet.

GILS originated in the United States. U.S. federal government agencies were required by law to implement this government-wide service beginning January 1996.

This service provides users with a means of finding government information, located in local and remote systems. Users find information by formulating system independent queries at the desktop and transmitting these to a remote database containing GILS records. The queries are presented to the remote database in an international standard language for information retrieval called Z39.50. It provides rules and procedures for the exchange of information between two systems independent of what hardware or software those systems run on. Z39.50 allows users to search one or more databases and to receive a consolidated set of responses to each search query. Recognizing that Z39.50 implementations will not be prevalent at the user's desktop, government information providers typically provide a Web/Z39.50 gateway to this information service. These gateways include support for the Internet-HTTP standard, supported by World Wide Web browsers, and thereby provide access to government information for anyone who has a Web browser.

2. Why Information Resource Description?

2.1 Benefits of Information Resource Description

The power of full text searching, as demonstrated in the Champlain project and other Internet-based implementations, provides users with an ability to identify vast amounts of information located in various sources. The identified resources typically include many irrelevant and duplicate items. Thus the user is left with the choice of reformulating the search in anticipation of improved relevancy or sifting through voluminous amounts of irrelevant and duplicated references.

Web crawlers and database search engines can operate much more efficiently and precisely if the information that they index and search is described in a precise and compact manner. Such precise and compact description of the content, structure and associated features of an information resource is referred to as metadata. Analogous terms such as uniform resource identifiers (URIs), uniform resource locators (URLs), and uniform resource names (URNs) are used within the Internet community in recognition of the need to enhance information access by standardizing information resource descriptions. Rather than searching an index of the entire text or some arbitrary portion of each document or information resource description the precision and relevance of search results could be improved by restricting the search to the metadata. Metadata identifies specific elements of an information resource such as the title, the author, the subject, the creation date, etc. In so doing it can make explicit information that cannot be readily deduced from the information resource itself (e.g. originator, language of resource, physical characteristics of the information container or medium, etc.). Metadata is essential in order to document information resources, to indicate their structure, the format of elements within the resources; what software must be used to access them, etc. Proper description of information resources enables search engines to focus, and

optionally weight, the search terms. It also enables a user to determine more readily and accurately the usefulness of an information resource prior to downloading it to the user's site.

Metadata can also support information resource management. For example, review dates within a resource description can trigger human review or automatic update of outdated information resources. Metadata can include information about security, authentication, or preservation of an information resource and can support version control. Metadata can also support service objectives, for example, identification of new resources based on date to automatically create a What's New page on a Web site. Metadata can be used to better link information to a user's needs, for example, deliver information only in the industrial sector or geographic area that match the user's interests.

2.2 Why Standard Metadata?

The primary objective in standardizing the metadata for government information resources is to facilitate user access to this information as envisaged by various single window scenarios. Basically users should be presented with a single view of the available government information resources. This view would hide the technicalities of information retrieval, indexing, display and related characteristics of individual government systems. The user would be left with the impression of accessing a single government-wide system.

The first step towards realizing this vision was taken in the GILS pilot project by reaching agreement on a uniform means of describing government information resources, the GILS record content and syntax. The content specifies the descriptive data (i.e. metadata) and the syntax prescribes the format that supports intersystem record exchange and processing. Actually there are separate syntaxes for information retrieval and for record exchange as noted in section 3.4.

GILS attribute sets and the GILS schema are registered objects (i.e. are globally identified and designated for use with Z39.50). The GILS Core Element Set with the additions recommended by the Canadian GILS Subgroup and others has proven to be extensible and flexible enough to describe a wide variety of information resources to various levels of detail.

2.3 Internet Action Group on Document Identification

The first federal government Internet conference, held in March 1994, concluded that "document identification" was an essential component for supporting access to government information. An Internet Action Group on Document Identification, consisting of federal librarians and a representative from the Depository Service Program, was established to explore the challenges associated with finding federal government information on the Internet. This group concluded that finding government documents on the *Internet* was indeed difficult and that is was hard to verify that a located Internet document did indeed come from the federal government. The apparent solution was

provision of "metadata" for government publications using one of several evolving metadata standards examined by the Action Group.

3. Canadian GILS Activities

3.1 GILS Subgroup

To formally address the perceived need for a government-wide metadata standard, the Treasury Board Internet Advisory Committee and the Electronic Document Standards Working Group (EDSWG) agreed that a GILS Subgroup (GSG) should be established in November 1995 within the Government Standards Program.

The mandate of the GILS Subgroup is to prepare a draft Government standard for describing federal government information resources in order to:

- organize and manage information resources in a consistent and systematic manner;
- facilitate the implementation of precision searching on the Internet or other wide area networks, and;
- provide improved service to end users by providing multiple access points to information resources through use of metadata descriptions.

3.2. Extending the GILS Standard - GSG Contribution

Early in its deliberations, the GILS Subgroup determined that the U.S. GILS standard required adaptation before it could meet Canadian government needs. For example, extensions and modifications were needed to:

- indicate and describe information resources in both official languages;
- describe individual documents and publications;
- identify classified and restricted information resources, and;
- develop a syntax to support record interchange.

An effective liaison was maintained throughout the spring of 1996 that allowed the GILS Subgroup to propose revisions and additions to the U.S. GILS standard (also called the GILS Profile). Following due assessment and consideration the U.S. GILS committee incorporated the various Subgroup requirements into version 2 of the GILS Profile finalized in October 1996.

This collaboration helped to “internationalize” the original version of the U.S. standard. For example, the indication of mandatory and optional elements was removed to allow national implementations to determine which elements should be mandatory.

This revision enables the element for "language of resource" to be mandatory in the Government of Canada but remain optional for U.S. government agencies.

3.3 Development of the Canadian GILS Guidelines

The Canadian GILS Guidelines, prepared by Fay Turner of the National Library, provides definitions and examples of individual elements and identifies sources of information in certain cases. Based on the GILS Guidelines, developed by the U.S. National Archives and Records Administration, the Canadian version supports federal government practices such as the use of Federal Identity Program symbols to identify the originating department. Other examples supplied by the Subgroup members included clarifications such items as the "schedule number" which is to be provided in accordance with National Archives of Canada guidelines.

Recommendations of the GILS Subgroup have been incorporated into the new edition of the Government of Canada Internet Guide. The Internet Guide recognizes that: "Users of federal government information on the Internet need to know that they can locate the information they want, and that the information they locate is up to date, accurate and authentic. Chapter 2, *Laying the Groundwork,* includes a section on providing metadata on information products. Chapter 3, *Building the Site*, includes an introduction to GILS and precision searching.

3.4 Specification of a GILS Record Syntax

GILS records may be transferred between two systems for two distinct purposes: 1) bulk record transfer to populate databases, and 2) retrieval of individual records by search clients. The interchange format for these two purposes is different.

3.4.1 Record Transfer and the GILS Interchange Format

One of the objectives of the Canadian GILS Pilot Project is to demonstrate the exchange of large files of GILS records between GILS systems; in particular, between record creator's systems and the GTIS central repository of GILS records. Records transferred for the purpose of replicating data and populating GILS databases should be encoded as SGML documents. This is a requirement for the transfer of records to the GTIS repository. The encoding is specified in the GILS document type definition (DTD which is available from the GILS Web site: http://gils.gc.ca/

3.4.2 Information Retrieval and GILS Interchange Formats

The interchange format for a GILS record transferred to a client system in response to a Z39.50 query of a remote database will depend on both the formats supported by the client and the formats supported by the GILS server. For a description of the available formats, also known as transfer syntaxes, see the Application Profile for the Government Information Locator Service (GILS), Version 2. The formats supported for the transfer of GILS records via the Z39.50 protocol are:

- USMARC format for machine-readable cataloguing information
- Generic Record Syntax (GRS)
- Simple Unstructured Text Record Syntax (SUTRS)
- Formats supported via the HTTP protocol: HTML and SGML

3.6 Presentations and Participant Training

Regular presentations on the work of the GILS Subgroup were made to the Electronic Document Standards Working Group and the Treasury Board Internet Advisory Committee. GILS was also covered in a presentation on metadata to the *Library Information Exchange Forum* (LIEF) in Spring 1996. The GILS Pilot Project was officially launched on October 30, 1996 with an Information Session for all interested departments. A half day workshop on GILS was held as part of the *Government on the Net 96* conference in November 1996. GILS Subgroup members have made various presentations to their own departments and to other departments.

To date no formal GILS training sessions such as those offered by NARA in the U.S. have been held. Feedback provided at various presentations and through the Pilot Project make it clear that a substantial amount of training is needed before the objectives, information and technical aspects of GILS can be fully appreciated and quality GILS records can be created.

4. GILS Implementation

Development of a government-wide service based on the GILS standard was driven by the resources and expertise made available through the Architect Program at the Government Telecommunications and Informatics Services (GTIS). These development efforts were based on the collective advice provided by the GILS Subgroup and supplemented with contracted expertise in specific areas such as standards for information retrieval (i.e. Z39.50), interchange formats (i.e. SUTRS) and document definition (i.e. SGML).

The following sections highlight the phase one implementations that have been achieved thus far.

4.1 Government Information Finder Technology: Target Architecture

To test the GILS standard and to demonstrate the service capabilities, the GTIS design team led by Oliver Javanpour, selected a system configuration based on the client server architecture associated with Z39.50 and other information retrieval standards. As illustrated in Figure 1, this implementation permits a user to post searches to a central database of GILS records and to retrieve records describing information resources (i.e. documents).

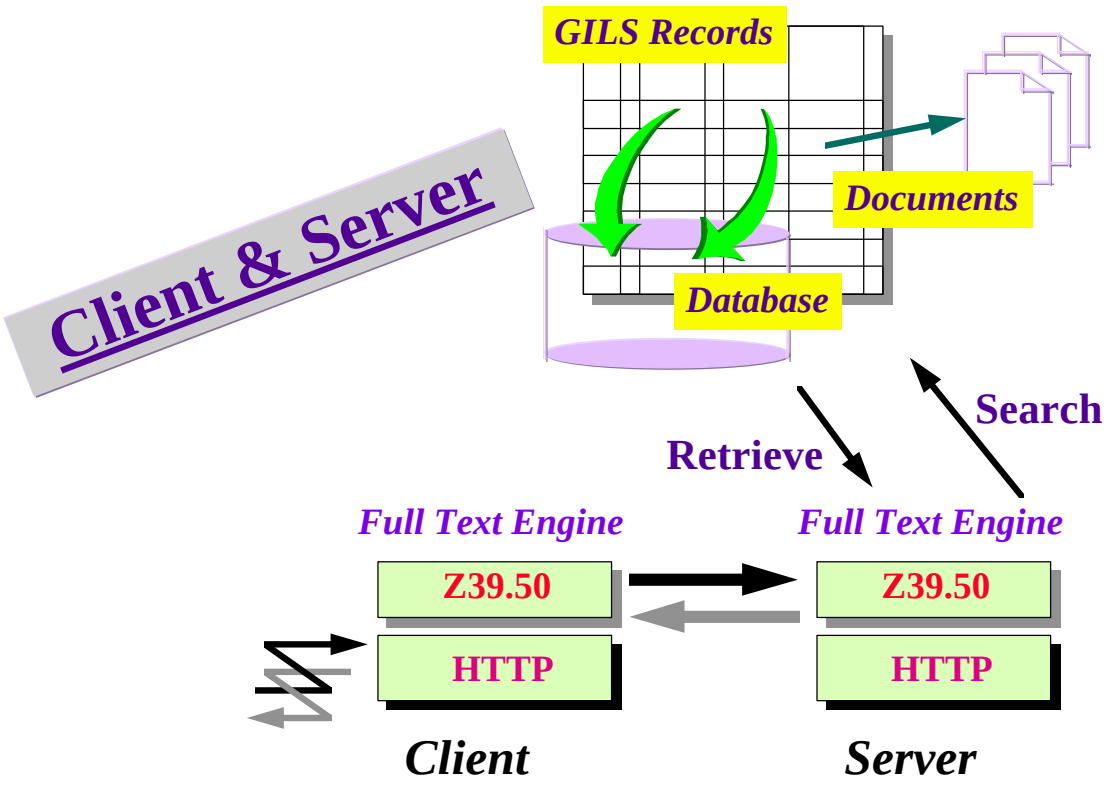

Figure 1 - GILS Pilot Search Facilities at GTIS Site

As illustrated above, a user has the option of using the http facilities available in Internet browsers or alternatively the client capabilities provided by commercial Z39.50 software.

4.2 Record Creation Options

Participating departments can create and interchange SGML-encoded records using one of three options. The best option for each participant will be determined, to a large extent, by departmental preferences and the existing information management infrastructure. The available record creation and contribution options include:

- Real-time record creation and contribution to the central repository using a WEB-based application tool developed for the project by GTIS. For details of the GILS Record Creation Tool see: http://gils.gc.ca;
- Scheduled batch conversion and contribution of existing information resource descriptions;
- Creation and contribution of GILS records from an SGML document environment. For details see Creating GILS Records in an SGML Environment available from the GILS Web site.

4.2.1 WEB Application Tool

To support record creation for the GILS pilot GTIS developed a Web-based tool for departments to capture the descriptive information and post it to the GILS database. This tool presents the record creator with a multi-page HTML form for recording the individual GILS elements and subelements. Mandatory information is highlighted and the record creator can supply as many of the optional elements as applicable, available or desirable. Certain elements are unique to specific information resources (e.g. an information resource isn't always linked to an agency program) or descriptive details may be missing at record creation time.

To reduce the record creation overhead, certain elements are filled according to default values established for each record creator and government department. These defaults are set when the creator registers with the GILS system; others are set as records are created and can be selected later from a pick list. Database maintenance functions have also been provided to enable record modification and deletion by record owners. Copies of newly created records are returned to the source department as e-mail attachments in the SGML interchange format and HTML.

4.2.2 Conversion of Existing Department Records to GILS

A data conversion tool was developed by GTIS to assist transformation of descriptive data in departmental records to the content and syntax specified in the Canadian GILS Guidelines. This tool was designed to support record interchange between existing departmental systems and the central GILS facility. Before this capability can be invoked each participating department must map the content of its descriptive information to the corresponding GILS record elements and values. Decisions and procedures for the periodic exchange and execution of the actual conversion are then established between GTIS and departmental support staff on a case by case basis.

4.2.2.1 Overview and Experience with the GILS Data Conversion Tool

GILS records are stored in an SGML format at the GTIS site. The data conversion tool was designed to provide government departments with a convenient method of converting existing descriptive records to a GILS SGML format. The conversion tool includes a data mapping (field name matching) facility to identify and match similar fields types which are then converted.

The process involves 3 steps. Initially the data must be assessed for matching field types and characteristics. Secondly the data must be queried and exported from its original database source to a text readable format. This option is available or can be developed for any database. Thirdly, the data must be processed through the

conversion utility. Following conversion of the data, it must be transferred to the GILS site through one of several options including e-mail and a web interface.

Several different record conversions were tested successfully and procedures are being explored for on-going operation with two source databases. Environment Canada provided a subset of its database which was queried and converted successfully. Conversion of a subset of the InfoSource source data encountered additional complexities associated with multiple record types.

Difficulties will arise whenever departments lack convenient access to internal expertise needed to extract the correct subset of the data from the database prior to conversion. If departments are to use the GILS conversion utility, some knowledge and technical expertise is needed in the existing departmental database system. This initial challenge can be solved through a one time effort by the departmental database administrator.

Due effort will have to be devoted to resolving complexities that can arise during the conversion process. For example, aligning of selection lists in the source application with values in corresponding GILS elements. In addition, departmental database update procedures could complicate which records are selected for periodic conversion to GILS format. Further guidance and development of the conversion tool will be required to assist departments in managing their own data conversions.

Appendix E illustrates the mapping that was undertaken for a test conversion of InfoSource records to GILS.

4.2.3 Integrating GILS and Electronic Document Management

Based on industry projections and government statements of directions, a growing proportion of services and source information will be available in electronic formats. Too accommodate this evolving electronic environment, a specification was developed for integrating GILS records in an electronic document management environment.

As demonstrated by the sample GILS records that were automatically generated for the Electronic Regulatory Filing initiative, the National Energy Board plus participating provincial agencies and industry sector companies will be producing GILS records automatically for SGML-based source documents. By leveraging an innovative construct, called architectural forms, these organizations will eliminate most of the manual labour and overhead associated with the creation of GILS records. Some professional effort will still be required to provide those elements that are not explicitly identified by SGML tags within source documents (e.g. controlled subject terms).

4.3 Evolution of Departmental GILS Sites

An underlying assumption of the target architecture was that it would evolve to include a growing number of departmental GILS databases as illustrated in Figure 2 below.

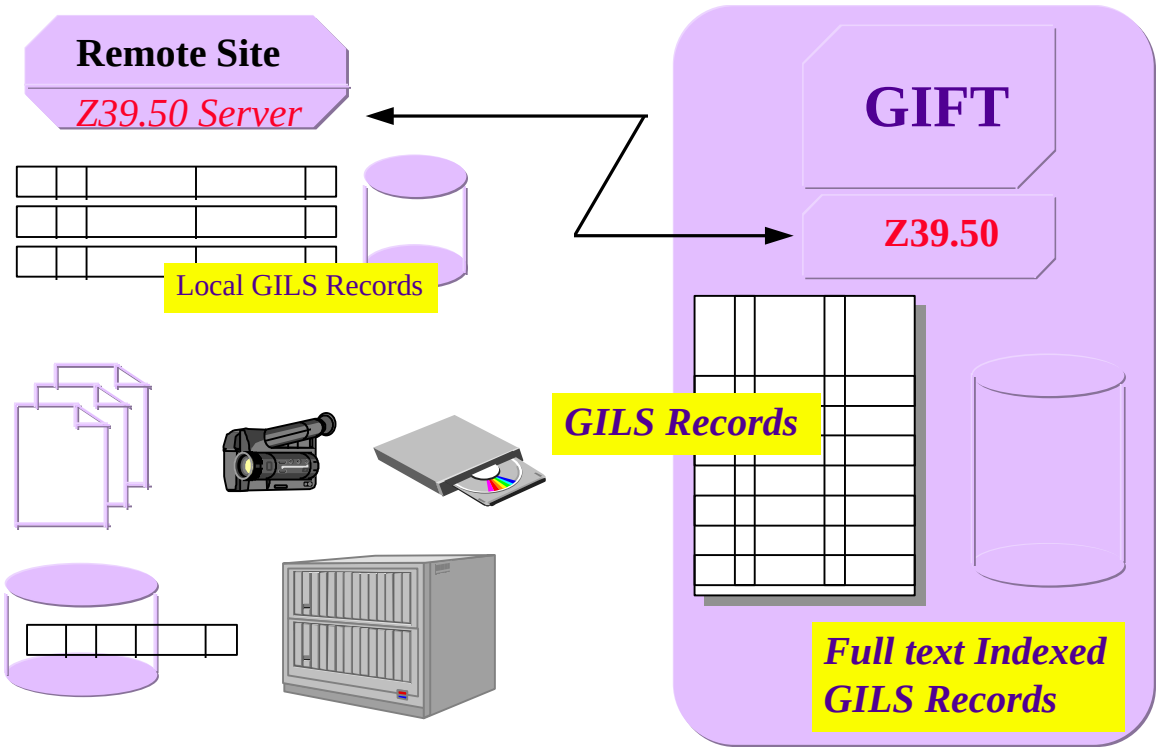

Figure 2 - Composite Departmental and Government-Wide GILS Environment

As illustrated above, the remote databases would contain GILS records as well as the information items themselves in a wide range of media types (e.g. CD-ROM, video, electronic and paper documents, etc.). The government's primary node on the Internet (denoted as GIFT) would hold a copy of GILS records maintained by each departmental database. It was further noted that the central registry might include only records for items that are publicly available. Users would get access to the departmental information holdings by identifying the location of the desired information before being switched, on request, to the departmental system to obtain a copy of the information item or to conduct a full text search of the item itself.

4.3.1 Information Services Enterprise (ISE)

In June 1996, TIMS approved a project to demonstrate inter-departmental co-operation in providing government information to users searching for a job or striving to develop an export market capability. Under the joint leadership of Industry Canada and Human Resources Development Canada, this initiative selected GILS as its standard for

describing information resources in these subject areas available to clients from a federation of government departments.

From a GILS perspective the project provided an enhanced user interface that enabled individuals to direct searches against one or more GILS databases. It gave users an ability to save the amalgamated search results at the local desktop for subsequent use. Preliminary indications are that creating a "federated" network of government information providers to identify, describe and provide information services in a common, standards-based manner is a manageable but challenging undertaking. These and other findings remain to be formalized and officially approved the project participants.

4.4 U.S. Implementation Experience

The second GILS Conference, held November 13-14, 1996 in College Park, Maryland, brought together over 300 delegates from across North America and Europe to discuss GILS implementations, issues and the future of GILS.

There was general consensus that GILS is a sound method for identifying and improving the dissemination government information and supporting information and record management. A GILS record is a "trusted" pointer to government resources because it not only describes the resource but also provides information about the creator of the record, date of record creation, originating department's programs and policies, contact name, etc.

There was also agreement that the technology for supporting GILS is not an issue. There are now more GILS compliant Z39.50 servers and clients than ever before. For example, the GILS system being developed for the Library of Congress will soon be placed in the public domain. This will include the Metadata Manager (administration tool), a Metadata Server (Z39.50/GILS server) and a Metadata Client (Z39.50 Java client). Even if a department does not have a Z39.50 server, it can make its GILS records available through Web technology.

Conference speakers revealed, however, that even though GILS is well entrenched in U.S. legislation (the Paper Reduction Act of 1995 states that department must provide a GILS service), there is great unevenness in the application of GILS by federal departments and agencies. Some have ignored GILS, while others have embraced it as the primary mechanism for identifying government resources. This unevenness is due primarily to the lack of a federal government-wide or even departmental-wide policy framework to support GILS. In addition, there are other competing initiatives and little co-ordination among the lead departments. (This situation is very similar to the one within the Canadian federal government.) The lack of a policy framework has resulted in mixed support by individual departments and a lack of consistent coverage by GILS records. Some departments have created less than 6 records, while other have created hundreds to identify all kinds of information resources. There were no guidelines on what should be identified by a GILS record.

There were several presentations on successful GILS implementations, including those by the U.S. Department of Defence, U. S. Environmental Protection Agency and Department of the Treasury. In all cases, success was achieved through corporate commitment, a policy framework and a team approach involving different sectors of the organization.

4.4.1 Implementation Factors

Following are some key factors that need to be addressed to ensure the future success of GILS:

4.4.1.1 Government and Department-wide Commitment to GILS

Legislation is not enough to ensure that GILS will be taken seriously. There must be a cultural change within a department to support public access to government information through GILS. Department management needs to establish GILS through policies and the assignment of the necessary resources to support a GILS service.

4.4.1.2 Department-wide Co-ordination

Different sectors within the organization responsible for information creation, management and distribution have to cooperate to support GILS. GILS needs to be team-driven through the participation of various sectors within the organization.

4.4.1.3 Content Guidelines

There must be government-wide guidelines indicating what information resources need to be identified. For example, GILS records should be created for all: Web sites, public assistance services, automated systems, publication catalogues, etc. The focus should be on what is important to the public. It is important to clearly state, on the GILS homepage, the scope of coverage of the described information resource, otherwise the public may be mislead into believing that the GILS records identify everything that is available from the department.

4.4.1.4 Links to the Information Resource

It is not enough to just describe the information resource in a GILS record. To make a GILS record truly effective as an information service support tool, it should contain a hyperlink to the actual resource if that resource is available in an electronic format.

4.4.1.5 Information User Feedback

Government departments need to work with the public to determine what information is useful to government information users.

4.4.1.6 Integration of GILS into Web Home Pages

Include GILS into existing Web home pages and use GILS records whenever possible to identify government services and information.

4.4.1.7 Automated Generation of GILS Records

To reduce the effort required to create GILS record, record creation should be incorporated into the production of any electronic information resource.

4.4.1.8 Need to Market GILS

GILS needs to be better marketed to increase service demand. The government should be known for distributing information rather than restricting access.

4.4.1.9 Conference Conclusion

GILS is still in its infancy having been part of U.S. legislation for only eighteen months. The success of GILS, however, rests with corporate buy-in. A lot of work is now required by individual departments to put in place the policies and infrastructure to support GILS as a public service providing effective access to government information.

4.5 Other Governmental GILS Initiatives

In some circles GILS is starting to be referred to as the "global" rather than "government" information locator service. This may become the reality if other nations copy the efforts that have taken place in North America.

4.5.1 Australia

A recent Australian report, Architecture for Access to Government Information*;* report of the IMSC - Technical Group, recognizes that: "[GILS] is becoming a de facto International standard for the description of government information and this is likely to be of assistance to users of government information." and recommends use of GILS in the Australian government.

4.5.2 G7 Countries

The G7 Environment and Natural Resources Management (ENRM) Project has adopted Z39.50 with GILS and compatible profiles as the ENRM remote search standard, with GELOS-specific usage guidelines under development.

4.5.3 Other Initiatives

A full list of jurisdictions and international projects using or investigating GILS can be found at the U.S. Geological Survey site at: <http://www.usgs.gov/public/gils/contacts html >.

5. GILS Pilot Project - Phase I

5.1 Project Objectives

As established by the GILS Subgroup early into the GILS standard definition process, a pilot project was essential to:

- highlight the need for and the benefits of metadata;
- support user information discovery, and;
- assess the adequacy and utility of the GILS record as a metadata standard.

Phase I of the Pilot Project has focused on building a fairly small but representative database to assess the adequacy and utility of the GILS record and GILS profile (a Z39.50 customization to support user access to GILS data). In addition it provides a systems environment that helps the participants understand the environment and opportunities for enhancing access to departmental information resources through GILS records maintained in departmental databases and a central repository.

5.2 Project Participants

Participants in the Pilot Project were encouraged to create 30 or more records per department using the WEB-based application developed by GTIS (described in section 4.2.1). Alternatively the test contribution could be created using an in-house record creation facilities and the GTIS record conversion application (see section 4.2.2). Once the test database was in place the participants were provided with suggestions to exercise and evaluate the search facilities.

As of December 31, 1996, the participant departments with a firm commitment to perform the pilot tasks included:

- Agriculture and Agri-Food Canada;
- Canadian Heritage;
- Department of Finance;
- Environment Canada;
- Fisheries and Oceans;
- Indian and Northern Affairs;
- Industry Canada;
- National Archives of Canada;
- National Energy Board;
- National Library of Canada;
- National Research Council;
- Public Works and Government Services Canada including the Depository Services Program;
- Revenue Canada
- Statistics Canada, and;
- Treasury Board Secretariat.

5.3 Evaluation Exercise

The Project evaluation will assess the suitability of the GILS record and the effectiveness of the GTIS tools and identify needed improvements. The Pilot Project will determine the implications of creating, maintaining and updating GILS records. It will assist government departments to identify the skill sets required for record creation, estimate the resource requirements and place GILS in departmental workflows. Finally, the evaluation will attempt to assess the usefulness of GILS information to users of government information. For that, after all, is the raison d'être of GILS, to improve public access to government information.

The pilot was officially closed on February 14th and the evaluation and preliminary report writing started. All the outstanding tasks and the desired volumes of data could not be assembled and fully evaluated as anticipated. This task will continue through to the end of March. Assuming the availability of future funding the outstanding tasks will be rolled into the Phase 2 activities. In the meantime, the preliminary findings are given in the following sections.

All participants in the GILS Pilot Project were asked to complete questionnaires on record creation facilities and on search facilities. At time of writing this report, very few questionnaires have been returned. The following summaries are based on very small samples but they give an early indication of participant feedback.

5.4 Summary and Interpretation of Responses to Record Creation Facilities

Of the sixty-six record creators in the 1996-97 GILS Pilot Project, only nine responded to the GILS Record Creation Questionnaire. The following analysis is therefore an initial insight at best.

5.4.1 Profile of the Record Creators

Six of the nine respondents had prior knowledge of GILS in addition to that provided at the general information session given on October 30th. The other three had no prior knowledge of GILS. Four had cataloguing experience and five respondents indicated that cataloguing knowledge or experience would be an important skill for GILS record creators. This view was enforced in comments concerning the Canadian GILS Guidelines.

5.4.2 Record Creation Effort

Five respondents spent between 30 and 60 minutes creating a GILS record. All indicated that this time decreased as they gained experience. The only respondent without prior data management, cataloguing or data entry experience spent twice as much time as

the respondents with record creation experience. This respondent also created the most records for the GILS pilot.

Since six of these respondents had to consult outside sources to supply the mandatory elements, and still failed to complete them, it appears that information required for mandatory fields is not easily available to the record creator

5.4.3 Information Requirements

There was general agreement, that the mandatory elements were useful and, with the exception of "Availability" were fairly easy to create.

Among the optional elements, the spatial domain, bounding co-ordinates and sources of data were the least useful and most difficult to supply. Otherwise, the majority of optional elements were perceived as useful and fairly easy to create.

Although nearly all respondents felt that no additional mandatory fields are needed, suggestions were received to add: contents note for web pages; record type; and include “none” as a value for medium type.

5.4.4 Impact on Current Work Routines

All participants undertook GILS record creation as part of a special project. From the responses to date it is not possible to draw conclusions about the place of GILS in current work flows or its impact.

5.4.5 Utility of Record Creation Tool

All respondents used the html form provided by GTIS. Five indicated that this tool was difficult to use. Three reported initial problems that vanished in January as the tool was upgraded. Two respondents mentioned that the system had lost records that they had input.

While the system successfully returned the input records, in both SGML and HTML formats, the process was flawed because guidance was not provided on local storage and processing requirements. Thus the returned records were retained locally on diskettes, in e-mail folders, and on network files.

Record updating was tested by eight respondents. The majority found this task fairly easy to do and GTIS technical support satisfactory.

5.4.6 Adequacy of Canadian GILS Guidelines

Five of the respondents indicated that the Guidelines were difficult to use. They found them difficult to understand and work with. The language was too hard to understand, too cataloguing-like, and not created for the average lay person. The examples were the best feature.

5.4.7 Conclusions and Recommendations

The following preliminary recommendations can be drawn from these initial responses to the questionnaire:

- the Record Creation tool needs significant improvements;
- the GILS Guidelines need to be rewritten and oriented to average users;.
- the optional fields could be reviewed and possibly reduced in number, and;
- the ideal GILS record creator would be someone with prior experience in cataloguing.

Record creation is a complicated, time-consuming task made difficult by the insufficient information available on most departmental information resources. This is further complicated by the inadequacy of the record creation tool. Average government employees can not be requested to take 30 minutes to an hour to create a GILS record or expected to perform at this level of sophistication. It would be helpful to further automate the record-creation process when this is possible.

In short, the survey results have demonstrated that the GILS process needs simplification and that, in particular, the record creation tool and guidelines need improvement prior to any GILS implementation across the federal government.

5.5 Summary and Interpretation of Responses to Search Facilities

Registered users who had created GILS records were requested to complete the search survey. Response rate was 5.5%.

The searches performed were based on suggested search strategies provided by the GILS Subgroup. None of the respondents were novice searchers. Further evaluation of the search facility will be sought from government users that didn't participate in the pilot and from the public at large.

5.5.1 GILS Search Facility

Overall the respondents were pleased with the design of the search screens. Respondents found the speed of searching and the relevancy of the search results good.

5.5.2 Utility of GILS Data

The Mandatory Elements and the Abstract field were found to be the most useful fields in the Advanced Search.

5.5.3 Ancillary Needs and Features

The respondents found that the On-line Instructions were not simple, clear, nor consistent. The Help Information was not helpful nor consistent and could include more examples. It was badly written and contained spelling errors.

Problems occurred with the search mechanism itself (i.e. a term did not get included in the search result and in two instances it took the searcher to web sites and not to a GILS record).

6. Phase I Follow-Up and Downstream Development

During the past fifteen months, a significant number of issues and requirements have been identified. All substantive consideration was deferred to a subsequent phase. Given the will and conviction of the Subgroup that this project should proceed to the next phase, following are a list of additional items that will need to be addressed and resolved at a government-wide level.

6.1 Linkage With Other Information Delivery Services

Various information delivery services exist within government and new ones were initiated within the past year. The Depository Services Program publishes the Weekly Checklist of new government publications and includes links to Internet addresses. The National Library is a repository for all government publications and creates cataloguing records for these publications including location information in the AMICUS data base. InfoSource is the tool mandated under the Access to Information Act and the Privacy Act to describe the organization of the Government of Canada and its unpublished information holdings. Records in these three long-standing sources have been successfully mapped to GILS. A single window to government information will remain a vision, rather than become reality, until these independent systems are interfaced through the type of linkage, between systems and information items, provided by GILS.

Linkage of existing services with a legislative or policy mandate (InfoSource, National Library, DSP) with GILS will also provide a firm mandate for GILS and minimize duplication in data preparation by departments. Examples of this potential include the interface with Environment Canada and InfoSource described in section 4.2.2.1. The follow-up activities should investigate and demonstrate how other information systems and resources could be linked into a GILS network.

6.2 Thesaurus Support

Controlled subject terminology is an optional element in the GILS record and can be omitted to ease the record creation effort. However, as demonstrated in the ISE project, control subject terms are essential to effectively match information with user needs (e.g. for sector specific information). If this type of information is to be provided

with any degree of consistency, controlled lists of terms which can be used across government departments are essential to support information indexing and user information discovery.

6.3 Registration and Administration of Information Resource Identifiers

The Uniform Resource Locator or URL has become the defacto information resource identifier on the Internet. Since the URL is an electronic address a location within a device on which the information resource is stored, the URL will change whenever the item is relocated or removed from the system.

A formal system of resource identifiers must be instituted if government information resources are to be uniquely and persistently identified. Formal public identifiers (e.g. see ISO 9070) coupled with common entity reference management (e.g. see SGMLOpen catalogue) must be instituted to ensure that every information object is given a persistent and unique identifier. This system could be based on the standards-based approach being implemented by the National Energy Board and its energy sector partners or some other scheme. Allocation, registration and administration of such a system of formal public identifiers could become the responsibility of ISBN agencies or a GILS facility.

Accurate, unique and persistent identifiers will encourage users to move directly from the GILS record to the actual information resource and thereby promote self service and minimize the information service burden in departments.

6.4 Guidelines for Departmental Server Implementation

Deployment of GILS servers at departmental sites during the ISE pilot, clearly illustrated the need for technical expertise, co-ordination and planning. Various issues will arise which can best be resolved through a focal point that can schedule network installations, interoperability tests and is goal-oriented. This type of expertise and written guidelines will have to be available to support deployment of GILS servers across government.

6.5 Security and Authenticity of GILS Records

Users must be assured that they are being pointed to authentic government information. This is critical in situations with business, health, legal ramifications and obligations. Detailed guidelines for record creation, training , improved record creation tools (e.g. more detailed help, a spell checker. etc.) and departmental quality control procedures are essential to ensure high quality GILS records. In addition, as highlighted by the Communications Security Establishment appropriate provisions will need to be made to ensure that GILS records for certain resources will be authentic and secure against malicious or accidental change.

6.6 Enhancements to the Central Search Facility

The Pilot Project has identified numerous enhancements to the GILS search facility. In addition, a variety of features could be added to enhance the services and data maintained at the central GILS facility. Third party certification of information source or user authentication would facilitate the development of secure electronic commerce by supporting the interchange of legal documents. Central conversion services could reformat and restructure source information as required by the end users desktop applications. These examples illustrate the potential to make government information services more efficient and effective through inter-departmental collaboration and shared facilities.

The GILS comment button could ask the question: "Did you find the information you were looking for? If not, what were you seeking?" GILS should aim to meet the top information needs of the public.

6.7 Maintaining the Canadian GILS Guidelines

It is evident that additional examples and explanations are needed to assist record creators with understanding the purpose and structure of certain data elements. In addition, the guidelines will need to be extended as new elements and features are added to the GILS standard.

The maintenance could include interpretation support and advisory group consultation and resolution of ambiguous situations. A more effective link could be developed between the guidelines and on-line help for information discovery and record creation alike.

6.8 Development of Resource Description Guidelines

There is a real need to help information owners to better describe their information resources so that users will have a fairly uniform and somewhat consistent view of available government information and services. A resource description guideline, which recommended what information resources should be described and a what level of detail, would help government agencies deliver quality information services.

6.9 Additional Support for Archiving Function

Users such as the depository libraries have highlighted the need for reliable long term access to government electronic information resources. Archiving Internet information has been identified as an issue by the TB Internet Advisory Committee. The National Archives and the National Library are both committed to fulfil their respective mandates for preservation and access to electronic government records and publications.

A single element (i.e. schedule number) has been provided to identify an information resource that is archived according to federal government regulations. Additional effort needs to be made to validate that this is sufficient or to define additional data and procedures that may be required.

6.10 Maintenance of Central GILS Database

It is clear that the technology exists to support a distributed GILS database configuration. However, the implications of moving to a distributed environment before GILS is operating smoothly need to be understood more fully before a decentralized option is made the preferred solution. The GILS target architecture, comprising a central database linked to departmental servers, provides a robust configuration that should provide reliable services during the initial development phases.

To ensure that government information remains accessible, procedures will be required to ensure that updated GILS records are retained at the central site whenever the information items or records are removed from departmental repositories.

6.11 Link to Directory Applications

A portion of the GILS record contains "contact" details and identifies the source where the actual information item can be obtained. This type of information appears in most government records and identifies the same "source" in many records. This type of information is also included in electronic directories. Investigations are underway to determine if electronic directory applications could communicate and interwork with GILS databases (i.e. interface the X.500 and Z39.50 protocols). If these efforts prove successful, GILS record creators will be provided with another opportunity to minimize the record creation effort by referencing the "contact" information held in a directory.

6.12 Communications Plan and Training Support

A communications plan and training program will need to be developed to support GILS throughout government.

The communication plan would advertise government strategies and services to make information more readily and easily available. It should focus on what is important to the public. GILS homepages and other media should clearly state the scope of coverage otherwise the public may be mislead into believing that the GILS records identify everything that is available from the department.

The training program on the otherhand would be directed at government departments and staff responsible for creating GILS records and maintaining the departmental information resources.

6.13 Integrating Cataloguing and GILS Records

Library cataloguing is rules based. The National Library and departmental libraries catalogue federal government publications according to international rules and using shared authority lists for names and subject terms. There are several options for integrating cataloguing with GILS thereby maximizing the quality of GILS records and minimizing duplication in record creation.

- Generate a GILS record from a cataloguing record.
- Library staff upgrade a GILS record created during the publishing process and convert the GILS record to a cataloguing record;
- A GILS record points to a library catalogue, not to individual publications, departmental publications are only described in the catalogue, and;.
- An on-line library catalogue which is Z39.50 compliant could act as a GILS server.

Libraries must experiment with these options to determine which options are preferable under what conditions.

6.14 Integrating GILS with Information Workflow Management

As demonstrated by the National Energy Board and by Industry Canada, the capture of GILS descriptive information can be integrated into the document creation process. The extent and nature of this integration will be influenced by the departmental work environment and supporting technologies. At the most sophisticated level the GILS record can be extracted from the information identified in the document itself. Alternatively, the GILS metadata can be captured as the document moves through its various stages of initial draft, revision and final release. Workflow management routines can use GILS metadata to identify and track the document throughout the entire information life cycle management. The combined workflow and GILS metadata could also be used to customize user views of the GILS record that is presented to the public and that is retained for internal use.

7. Recommendations

The GILS Pilot Project resulted in a number of successes but also highlighted important issues that need to be addressed to increase the probability that identification and location of government information resources will be effective, efficient and responsive to user needs. The future of GILS depends on the government-wide recognition and concerted action to ensure that all critical success factors are addressed on time and within available budgets. These critical factors can be categorized as policy, operational and technical. Strategies must be devised to ensure that each factor will be addressed and the required solutions will be implemented by individual departments and appropriate components included the government-wide information and information technology framework.

The following address specific aspects that need to be addressed in the policy, operation and technology spheres.

7.1 Policy Factors

7.1.1 Government-wide Commitment to GILS

Existing government policies need to be reviewed and adjusted as necessary or new ones developed to encourage government-wide implementation of GILS. These policies need to:

- establish and promote GILS as an official government standard;
- require GILS implementation as an official government policy;
- develop and implement a plan for the establishment of a centralized GILS facility and decentralized network of departmental GILS systems, and;
- establish a GILS Co-ordinator within each government department or agency.

7.1.2 Department-wide Co-ordination

In addition to government policy on GILS, a corporate culture must be fostered within departments to support government and public access to government information through GILS. Policies alone can not ensure that GILS will be taken seriously. Departmental management needs to establish GILS through internal policies and the assignment of the necessary personnel and infrastructure to support a GILS service. All sectors within a department responsible for information creation, management and distribution have to cooperate and adopt a team approach to achieve effective GILS implementation.

7.2 Operational Factors

The overall impact of a government-wide GILS infrastructure will be determined by the departmental commitment to create quality GILS records and to supplement this by providing effective access to the identified information resources. The added effectiveness and efficiency can be realized by:

7.2.1 Improving Information Access

Any ability to improve internal and external access will be heavily influenced by existing systems and information management practices. GILS implementation will improve information access if departments:

- implement a GILS server;
- provide automated links to the information resource;
- integrate GILS records with Web home pages;

- encourage user feedback, and;
- promote GILS as the preferred, common strategy for accessing government information.

7.2.2 Streamlining Record Creation Routines and Practices

Departments need to examine options and strive to achieve greater efficiencies in generating GILS records by:

- automated generation of GILS records;
- integrating descriptive data creation into electronic information workflow;
- reconciling and integrating library cataloguing activities with GILS record creation, and;
- integrating the information management routines through the use of common Intranet and Internet technologies.

7.2.3 Providing Staff Training and Development

Knowledgeable and committed employees are essential to improved services. The staff training and development at the department level would need to be co-ordinated and supported through government-wide training initiatives that would provide on-line help and training sessions. Introduction of GILS and the associated operational implications will require training and development in areas such as:

- implementing Z39.50 and setting up servers, gateways and client support;
- maintaining departmental information as a component of the government-wide information resources;
- providing enhanced access through use of thesaurus and controlled subject terms, and;
- creating and maintaining GILS records in a departmental and networked environment.

7.3 Technical Factors

There is a clear need for strong technical leadership and direction in the initial stages of GILS implementation. This guidance would best be provided by a “lead” agency that would be capable of:

- enhancing and maintaining a GILS record creation and search tools to incorporate new elements, values, edits, better bilingual support;
- maintaining and developing conversion tools to permit existing departmental records to be converted to the GILS format;

- extending the pilot GILS implementation to links with controlled vocabularies and shared authority lists to improve subject access to GILS records;
- updating and maintaining the Canadian GILS Guidelines;
- maintaining and developing the central GILS database to operate in a decentralized database environment, and;
- developing record security and authentication features in accordance with evolving government-wide standards and practices.

Appendix A - Members of the GILS subgroup

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Appendix B - Questionnaire for Record Creators

B.1 Profile of GILS record creator

Please indicate if you are completing this questionaire for the GILS Subgroup Project_____ or ISE Working Group_____ or Both_____

1. Name and Department _____

2. Did you have any relevant field-creation experience Yes___No___ (please check off as many as apply from the list below)

Cataloguing:	_____
Data or Database Management:	_____
Document Management:	_____
Other, please specify	_____

3. Did you have any prior knowledge of GILS. (Excluding general information session of Oct. 30th)

yes	_____
no	_____
some	_____

4. Now that you have created some GILS records, what skills do you think would be important for a GILS record creator to have?

B.2 Time Spent Creating Records

5a. How many GILS records have you created for this pilot? _____

5b. How many of these were records using predominantly mandatory fields? _____

5c. How many of these were records using more than just the mandatory fields? _____

6a. On average, how long did it take to create a GILS record?

Less than 30 minutes	_____
30 - 60 minutes	_____
More than 60 minutes	_____
Not sure	_____

6b. Did this time decrease as you went along? Yes_____ No_____

6c. If you answered yes to the above, please indicate what was the least amount of time it took for you to create a single GILS record.

Less than 30 minutes _____
30 - 60 minutes _____
More than 60 minutes _____

7. On average, how long did other procedures related to GILS record production (e.g. sending files to GTIS, record keeping, consultation with author etc.) take (average time per record)?

Less than 5 minutes _____
5 - 10 minutes _____
10 - 30 minutes _____
More than 30 minutes _____
Not sure _____

8. How did the total amount of time involved in creating GILS records compare with your initial expectations (i.e. for gathering information, analyzing , inputting, and reviewing)? Did it take you:

Longer than expected _____
Less time than expected _____
About the same amount of time as expected _____
Not sure _____

B.3 Availability of Information Required

9. Were you able to complete the MANDATORY data elements for the information holding described:

Always _____
Most of the time _____
Some of the time _____
Never _____
If not Always, please indicate why not _____

10. Did you need to consult outside sources in order to complete the mandatory data elements for the information holding described?

Yes _____
No _____

11. If you answered "Yes" to question 2 above, please indicate which of the following outside sources you consulted when creating GILS records (please choose all which apply):

An existing record describing the information holding _____
The originator of the information holding _____
One of the GILS Subcommittee Group members _____
Other (please specify) _____

12. Please indicate the usefulness and ease of creation of the GILS data elements on the following 2 scales of 1 to 5 with 1 being most useful and 5 being least useful and easy to create. Please put a line through any of the data elements that you had no occasion to create.

MANDATORY ELEMENTS	USEFULNESS	EASE OF CREATION
Title	1 2 3 4 5	1 2 3 4 5
Originator	1 2 3 4 5	1 2 3 4 5
Date of Publication	1 2 3 4 5	1 2 3 4 5
Language of Resource	1 2 3 4 5	1 2 3 4 5
Availability	1 2 3 4 5	1 2 3 4 5
Medium	1 2 3 4 5	1 2 3 4 5
Distributor	1 2 3 4 5	1 2 3 4 5
Order Process	1 2 3 4 5	1 2 3 4 5
Order Information	1 2 3 4 5	1 2 3 4 5
Record Source	1 2 3 4 5	1 2 3 4 5
Language of Record	1 2 3 4 5	1 2 3 4 5
Date of Last Modification	1 2 3 4 5	1 2 3 4 5

OPTIONAL ELEMENTS	USEFULNESS	EASE OF CREATION
Author	1 2 3 4 5	1 2 3 4 5
Date of Publication Structured	1 2 3 4 5	1 2 3 4 5
Place of Publication	1 2 3 4 5	1 2 3 4 5
Abstract	1 2 3 4 5	1 2 3 4 5
Controlled Subject Index	1 2 3 4 5	1 2 3 4 5
Subject Terms Controlled	1 2 3 4 5	1 2 3 4 5
Controlled Term	1 2 3 4 5	1 2 3 4 5
Subject Terms Uncontrolled	1 2 3 4 5	1 2 3 4 5
Uncontrolled Term	1 2 3 4 5	1 2 3 4 5
Spatial Domain	1 2 3 4 5	1 2 3 4 5
Bounding Coordinates	1 2 3 4 5	1 2 3 4 5
West Bounding Coordinate	1 2 3 4 5	1 2 3 4 5
East Bounding Coordinate	1 2 3 4 5	1 2 3 4 5

OPTIONAL ELEMENTS	USEFULNESS					EASE OF CREATION				
North Bounding Coordinate	1	2	3	4	5	1	2	3	4	5
South Bounding Coordinate	1	2	3	4	5	1	2	3	4	5
Place	1	2	3	4	5	1	2	3	4	5
Place Keyword Thesaurus	1	2	3	4	5	1	2	3	4	5
Place Keyword	1	2	3	4	5	1	2	3	4	5
Time Period	1	2	3	4	5	1	2	3	4	5
Time Period--Textual	1	2	3	4	5	1	2	3	4	5
Time Period--Structured	1	2	3	4	5	1	2	3	4	5
Beginning Date	1	2	3	4	5	1	2	3	4	5
Ending Date	1	2	3	4	5	1	2	3	4	5
Resource Description	1	2	3	4	5	1	2	3	4	5
Cost	1	2	3	4	5	1	2	3	4	5
Cost Information	1	2	3	4	5	1	2	3	4	5
Technical Prerequisites	1	2	3	4	5	1	2	3	4	5
Available Time Period	1	2	3	4	5	1	2	3	4	5
Available Time Textual	1	2	3	4	5	1	2	3	4	5
Available Time Structured	1	2	3	4	5	1	2	3	4	5
Beginning Date	1	2	3	4	5	1	2	3	4	5
Ending Date	1	2	3	4	5	1	2	3	4	5
Available Linkage	1	2	3	4	5	1	2	3	4	5
Linkage Type	1	2	3	4	5	1	2	3	4	5
Linkage	1	2	3	4	5	1	2	3	4	5
Sources of Data	1	2	3	4	5	1	2	3	4	5
Methodology	1	2	3	4	5	1	2	3	4	5
Access Constraints	1	2	3	4	5	1	2	3	4	5
General Access Costraints	1	2	3	4	5	1	2	3	4	5
Originator Dissemination Control	1	2	3	4	5	1	2	3	4	5
Security Classification Control	1	2	3	4	5	1	2	3	4	5
Use Constraints	1	2	3	4	5	1	2	3	4	5
Point of Contact	1	2	3	4	5	1	2	3	4	5
Purpose	1	2	3	4	5	1	2	3	4	5

OPTIONAL ELEMENTS	USEFULNESS					EASE OF CREATION				
Agency Program	1	2	3	4	5	1	2	3	4	5
Cross Reference	1	2	3	4	5	1	2	3	4	5
Cross Reference Title	1	2	3	4	5	1	2	3	4	5
Cross Reference Relationship	1	2	3	4	5	1	2	3	4	5
Cross Reference Linkage	1	2	3	4	5	1	2	3	4	5
Linkage Type	1	2	3	4	5	1	2	3	4	5
Linkage	1	2	3	4	5	1	2	3	4	5
Schedule Number	1	2	3	4	5	1	2	3	4	5
Original Control Identifier	1	2	3	4	5	1	2	3	4	5
Record Review Date	1	2	3	4	5	1	2	3	4	5

13. Did you find that there were any data elements needed to describe your information resource which were missing from the Mandatory elements?

Yes _____ (specify)
No _____

14. Did you create abstracts for the information holdings you described?

Yes _____
No _____

15. If you answered "No" to question 14 above, why not? Please check as many as apply.

Lack of time _____
Lack of expertise _____
The title(s) described the content sufficiently _____
Other (please specify) _____

16a. Did you add subject terms to your GILS records?

No _____
Yes _____

16b. If you used a thesaurus or an authoritative list, please indicate which one _____

16c. Did you use place names or an authoriative list ?

Yes _____
No _____

B.4 Work Routines

17. Does your department already maintain records describing information holdings?

Yes _____
No _____
If you answered "No" to this question, proceed to Question 21.

18. To which of the following resources does your department currently contribute records describing information holdings?

InfoSource	_____
Departmental Library Catalogue	_____
National Library Union Catalogue	_____
Departmental Publications Catalogue	_____
Departmental Web Site	_____
Other (please specify)	_____

19. Do these records describe (please select all which apply):

Individual articles, chapters, sections, or graphics	_____
Individual monographs or serials	_____
Collections of information (a database, microfiche holdings, maps)	_____
Services (help desk)	_____
Other (please specify)	

20. If you are already using meta-data, please circle the level of difficulty encountered in adapting this data for GILS. (1 is most amount of difficulty and 5 least amount of difficulty).

1 2 3 4 5

B.5 Record Creation Tool

21. Did you use the record creation tool (html form) provided by GTIS?

Yes _____
No _____ (Please specify what you used)

If you answered "No" to this question, proceed to the next section (The Guidelines).

22a. On a scale of 1 to 5 (with 1 as most difficult and 5 as least difficult), how difficult was this tool to use?

1 2 3 4 5

22b. If you circled 1 or 2, please indicate why.

22c. In which format did you receive the return of the records? _____

22d. What did you do with the output records received? _____

23. Would you say that the amount of technical support received from GTIS was:

Satisfactory _____
Unsatisfactory _____ (please indicate why)

24a. Did you attempt to update records? Yes_____ No_____

24b. If yes, on a scale of 1 to 5, how easy was it to locate and update records once they were created and sent to the central repository? (1 = most difficult, 5 = least difficult)

1 2 3 4 5

25. Are there any specific recommendations you would like to make in terms of the design of this tool?

B.6 The Canadian GILS Guidelines

26a. On a scale of 1 to 5, how difficult to use are the Canadian GILS Guidelines? (1 = most difficult, 5 = easy to use)

1 2 3 4 5

26b. If you circled 1 or 2, please indicate why_____

27. Please indicate what you liked BEST about this tool:

Amount of detail (appropriate amount of detail) _____
The examples _____
The format in which the information was presented _____
The access points (table of contents) _____
The language used to describe and explain GILS _____
Other (please specify) _____

28. Please indicate what your liked LEAST about this tool:

Amount of detail (too much detail _____ not enough detail _____)
The examples _____
The format in which the information was presented _____
The access points (table of contents) _____
The language used to describe and explain GILS _____
Other (please specify) _____

29. Are there any specific recommendations you would like to make for the improvement of these Guidelines (e.g., guidelines provided for language, structured date)?

Appendix C - Questionnaire for Search Participants

C.1 GILS Search Facilities

On a scale of 1-5, 1 being the highest, rate the following:

a) Design of the search screen 1 2 3 4 5
Comments:

b) Online instructions 1 2 3 4 5
Comments:

c) Help information 1 2 3 4 5
Comments:

d) Search mechanism 1 2 3 4 5
Comments:

e) Speed of searching 1 2 3 4 5
Comments:

f) Display of search results 1 2 3 4 5
Comments:

g) Relevancy of search results 1 2 3 4 5
Comments:

h) Content of GILS record 1 2 3 4 5
Comments:

2. General Comments: _____

3. Did you use only the Simple Search? Yes _____ No _____
If yes, skip to question 7.

4. In the Advanced Search, indicate the usefulness of the following mandatory elements:
1 = most useful, 5 = least useful, NA = didn't use

ELEMENT	*SCALE*
Title	1 2 3 4 5 NA
Originator	1 2 3 4 5 NA
Date of Publication (textual)	1 2 3 4 5 NA
Language of Resource	1 2 3 4 5 NA

Availability	1 2 3 4 5 NA
Medium	1 2 3 4 5 NA
Distributor Sub-Elements	1 2 3 4 5 NA
Order Process	1 2 3 4 5 NA
Order Information	1 2 3 4 5 NA
Control Identifier	1 2 3 4 5 NA
Record Source	1 2 3 4 5 NA
Language of Record	1 2 3 4 5 NA
Date of Last Modification	1 2 3 4 5 NA

5. Did you use any optional elements during your searches? Yes No
   If No, skip to question 7.

6. In the Advanced Search indicate the usefulness of the following optional elements:
   1 = most useful, 5 = least useful, NA = didn't use

ELEMENT	***SCALE***
Author	1 2 3 4 5 NA
Place of Publication	1 2 3 4 5 NA
Abstract	1 2 3 4 5 NA
Controlled Subject Index	1 2 3 4 5 NA
Subject Thesaurus	1 2 3 4 5 NA
Subject Terms Controlled	1 2 3 4 5 NA
Subject Terms Uncontrolled	1 2 3 4 5 NA
Spatial Domain	1 2 3 4 5 NA
Place & Place Sub-Elements	1 2 3 4 5 NA
Time Period	1 2 3 4 5 NA
Resource Description	1 2 3 4 5 NA
Cost Information	1 2 3 4 5 NA
Technical Prerequisites	1 2 3 4 5 NA
Available Time Period	1 2 3 4 5 NA

Available Time Textual	1 2 3 4 5 NA
Available Time Structured	1 2 3 4 5 NA
Available Linkage	1 2 3 4 5 NA
Linkage Type	1 2 3 4 5 NA
Linkage	1 2 3 4 5 NA
Sources of Data	1 2 3 4 5 NA
Methodology	1 2 3 4 5 NA
Access Constraints & Sub-Elements	1 2 3 4 5 NA
Use Constraints	1 2 3 4 5 NA
Point of Contact	1 2 3 4 5 NA
Supplemental Information	1 2 3 4 5 NA
Purpose	1 2 3 4 5 NA
Agency Programme	1 2 3 4 5 NA
Cross Reference & Sub-Elements	1 2 3 4 5 NA
Schedule Number	1 2 3 4 5 NA
Original Control Identifier	1 2 3 4 5 NA
Record Review Date	1 2 3 4 5 NA

C.2 General Questions

7. How would you describe your proficiency in on-line searching, where 5 would indicate a novice searcher?

1 2 3 4 5

8. Did the content of the GILS records lead you to an appropriate document repository, collection, service, system, etc.?

Yes _____ No _____ Comments:

9. Were official language requirements properly addressed?

Yes _____ No _____ Comments:

10. Are there any additional features you would like to see added to the search mechanism?

General Comments:

Appendix D - Bibliography

Australia. Information Management Steering Committee. Technical Group. Architecture for Access to Government Information; Report of the IMSC - Technical Group. 1996 <URL:http://www.adfa.oz.au/DOD/imsc/imsctg/imsctg1a.htm >

Canada. Canadian GILS Guidelines. Prepared by the National Library of Canada and the Treasury Board of Canada Secretariat, GILS Subgroup (GSG). Hull: 1996. <URL:http://gils.gc.ca/gils/info_ea.html >

Canada. Government of Canada Internet Guide. Ottawa: Treasury Board Secretariat, 1996. <URL: http://canada.gc.ca/programs/guide/index.html >

Canada. Guide d'Internet du gouvernement du Canada. Ottawa: Secretariat du Conseil du Trésor, 1996 <URL: http://canada.gc.ca/programs/guide/index.html>

Canada. Les lignes directrices relatives au Service de localisation de l'information du gouvernement régissant la préparation d'enregistrements GILS. 1966 <URL:http://gils.gc.ca/gils/guide_f.html .

Canada. Government Telecommunications and Informatics Services. Creating GILS Records in an SGML Environment. 1996. <URL:http://gils.gc.ca/gils/creatingg_e.html >

Canada. Government Telecommunications and Informatics Services. GILS SGML DTD. Hull: Government Telecommunications and Informatics Services, 1996. <URL:http://gils.gc.ca/gils/info_ea.html >

Canada. Government Telecommunications and Informatics Services. Government Information Finder Technology & The Single-Window-Infrastructure. Ottawa: GTIS, 1996.

Christian, Eliot J. "GILS; What is it? Where's it going?" In: D-Lib Magazine. December 1996. <URL: http://www.dlib.org/dlib/december96/12christian.html >

Christian, Eliot. Why a Global Information Locator? <URL:http://www.g7.fed.us/enrm/flyer.html >

IFLANET. Metadata Resources. <URL: http://www.nlc-bnc.ca/ifla/II/metadata.htm >

Miller, Eric. Dublin Core Element Set Crosswalk. (DRAFT) 1997. <URL:http://www.oclc.org:5046/~emiller/DC/crosswalk.html >

Moen, William and Christian, Eliot. Application Profile For The Government InformationLocator Service (GILS). Version 2. 1996. <URL:http://www.usgs.gov/gils/prof_v2.html >

Sperberg-McQueen, C.M. and Lou Burnard. Guidelines for Electronic Text Encoding and Interchange (P3). 1994. <URL: http://etext.virginia.edu/TEI.html >

Turner, Fay. Z39.50 Information Retrieval Standard: Overview and Implementations. Ottawa: National Library of Canada, 1995 (Network Notes # 8) <URL:http://www.nlc-bnc.ca/pubs/netnotes/notes8.htm >

Turner, Fay. La norme Z39.50 de repérage de l'information : vue d'ensemble et application. Ottawa: Bibliothèque nationale du Canada, 1995 (Flash Réseau, Numéro 8) <URL: http://www.nlc-bnc.ca/pubs/netnotes/fnotes8.htm >

U.S. Library of Congress. Z39.50 Maintenance Agency Web page. <URL:http://lcweb.loc.gov/z3950/agency/ >

Nancy Brodie, Fay Turner. "Government Information Locator Service (GILS) Developments in the Government of Canada" In: Liaison December 2, 1996

Nancy Brodie, Fay Turner "GILS: an Evolving International Approach to Enhancing Resource Discovery". RIAO'97, Montreal, June 25-27, 1997.

Appendix E - Mapping GILS and InfoSource Data Elements

The following table identifies the five different kinds of records maintained in InfoSource. It identifies the data elements in each of these records and gives the corresponding element in the GILS record. A blank entry in any cell indicates that a GILS element has no corresponding data element in InfoSource.

One or more codes appear, within brackets, after the GILS element name to indicate that a element is mandatory (i.e. M) or optional (i.e. O) and whether the element is repeatable (i.e. R) or not repeatable (i.e. NR)

InfoSource	***InfoSource***	***InfoSource***	***InfoSource***	***InfoSource***	***Canadian* GILS**
General Information	***Program Records***	***Personal Information Banks***	***Manuals***	***Directory of Federal Govt Databases***	
Name of Department or Agency	Title	Bank Name	Title	Name of Database	TITLE (M, NR)
Name of Department or Agency	Name Organization	Name Organization	Organization	Originating Department	ORIGINATOR (M, R)
na					AUTHOR (O, R)
none	n.a. (when first registered - but not in record)	n.a.	not available	Date created	DATE OF PUBLICATION (M for publications or resources with discrete creation or update date, NR)
City from address of availability	City from address of availability	City from address of availability	City from address of availability	City from address of availability	PLACE OF PUBLICATION (O, NR)
English, French	English or French	English or French	English and French (unless labelled English only)	Language	LANGUAGE OF RESOURCE (M if applicable, R)
Background Responsibilities Organization	Description Access Note	Description Class Purpose Uses Notes	no	Type	ABSTRACT (O, NR)
					CONTROLLED SUBJECT INDEX (O, R)
	Topics			Subject coverage	SUBJECT TERMS UNCONTROLLED (O, NR)

InfoSource	*InfoSource*	*InfoSource*	*InfoSource*	*InfoSource*	*Canadian GILS*
General Information	***Program Records***	***Personal Information Banks***	***Manuals***	***Directory of Federal Govt Databases***	
na					SPATIAL DOMAIN (O, NR)
na				Geographic coverage	PLACE (O, R):
na					TIME PERIOD (O, R)
					AVAILABILITY (M, R):
none	Storage Medium (but free text)	default paper		Medium	MEDIUM (M, NR)
Departmental Public Enquiry point	ATIP Co-ordinator	ATIP Co-ordinator	ATIP Co-ordinator and Reading Rooms	Distributor	DISTRIBUTOR (M, NR):
na	PR Number	TBS Number Bank Number			RESOURCE DESCRIPTION (O, R)
Public Information Office (Source: Additional Information)	How to Apply (ATI)	How to Apply (Privacy)			ORDER PROCESS (M, NR)
			Reading Room		ORDER INFORMATION (M, NR)
No	Yes	Yes			COST (O, NR)
					COST INFORMATION (O, NR):
na					TECHNICAL PREREQUISITES (O, NR)
na		Retention			AVAILABLE TIME PERIOD (O, R)
na					AVAILABLE LINKAGE (O, R)
					LINKAGE TYPE (O, NR)
					LINKAGE (O, R)
na					SOURCES OF DATA (O, NR)
na					METHODOLOGY (O, NR)

InfoSource	*InfoSource*	*InfoSource*	*InfoSource*	*InfoSource*	*Canadian GILS*
General Information	***Program Records***	***Personal Information Banks***	***Manuals***	***Directory of Federal Govt Databases***	
na	Access to Info Exemptions & Exclusions	Privacy Act (p. VII) some personal information is confidential		Access	ACCESS CONSTRAINTS (O, NR)
na	Crown	Crown			USE CONSTRAINTS (O, NR)
na		Contacts		Contacts	POINT OF CONTACT (O, NR)
Legislation	Legislation	Legislation	Legislation		PURPOSE (O, NR)
na	Organization	Organization			AGENCY PROGRAM (O, NR)
na		Related to			CROSS REFERENCE (O, R)
		Program Record Number			CROSS REFERENCE TITLE (O, NR):
na		PAC Number			SCHEDULE NUMBER (O, NR)
created on conversion	Assign	Assign	Assign		CONTROL IDENTIFIER (M, NR)
					ORIGINAL CONTROL IDENTIFIER (O, NR)
TBS	InfoSource	InfoSource	InfoSource		RECORD SOURCE (M, NR)
English or French					LANGUAGE OF RECORD (M, NR)
Date of record creation	December 1996	December 1996	December 1996		DATE OF LAST MODIFICATION (M, NR)
					RECORD REVIEW DATE (O, NR)